

ABSTRACT

The invention provides olefin polymerization catalyst exhibiting excellent polymerization activities, a process for olefin polymerization using the catalyst, a novel transition metal compound useful for the catalyst, and an  $\alpha$ -olefin/conjugated diene copolymer having specific properties. The olefin polymerization catalyst of the invention comprises (A) a transition metal compound of formula (I) or (II), and (B) an organometallic compound, an organoaluminum oxy-compound or an ionizing ionic compound. The novel transition metal compound of the invention is a compound of formula (I) wherein M is a transition metal atom of Group 3 or 4 of the periodic table; m is an integer of 1 to 3;  $R^1$  is a hydrocarbon group, etc.;  $R^2$  to  $R^5$  are each H, a halogen, a hydrocarbon group, etc.;  $R^6$  is a halogen, a hydrocarbon group, etc.; n is a number satisfying a valence of M; and X is a halogen, a hydrocarbon group, etc.

